

# Special Report

## Differences in Worldwide Tobacco Use by Gender: Findings from the Global Youth Tobacco Survey

Global Youth Tobacco Survey Collaborating Group

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**ABSTRACT:** *The World Health Organization (WHO) attributes 4.9 million deaths annually to tobacco. That figure could reach 10 million by 2030. The Global Youth Tobacco Survey (GYTS), an international surveillance project developed jointly by WHO and the US Centers for Disease Control and Prevention (CDC), enables countries to monitor youth tobacco use and guide implementation and evaluation of tobacco prevention and control programs. The GYTS has been completed at 121 sites in 76 countries plus the Gaza Strip/West Bank, with national-level data generated in 52 countries, and city, state, or provincial/regional data generated in 24 countries. This paper reports on gender differences in tobacco use among young people in the six WHO Regions worldwide. Two unexpected findings emerged from the study. First, little difference existed between the genders in cigarette smoking or in use of other tobacco products. From 120 sites that collected data on cigarette smoking by boys and girls, more than one-half (n = 61) showed no difference by gender. For other tobacco products, 82 of 117 sites (70.1%) showed no difference by gender. Second, analysis revealed surprisingly high use of other tobacco products compared to cigarette smoking. Findings suggest programs should focus broadly on all tobacco products, not just cigarettes. Also, programs need gender-sensitive components that focus on unique consequences for females, such as effects on reproduction. Lack of gender differences in the study underscores the potential growth of the tobacco epidemic, especially among women in developing countries - where most sites in this study were located. (J Sch Health. 2003;73(6):207-215)*

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Tobacco use is one of the chief preventable causes of death in the world. The World Health Organization (WHO) attributes 4.9 million deaths a year to tobacco, a figure expected to rise to more than 10 million deaths a year by 2030.<sup>1</sup> Pronounced gender differences in tobacco use are seen throughout the world: WHO estimates 47% of men and 12% of women smoke, including 42% of men and 24% of women in developed countries, and 48% of men and 7% of women in developing countries.<sup>2</sup> Global data on gender differences in rates of all forms of tobacco use are limited.

WHO counts 192 member states distributed among six regions: African Region (AFR), Americas Region (AMR), Southeast Asia Region (SEAR), European Region (EUR), Eastern Mediterranean Region (EMR), and Western Pacific Region (WPR). Previous studies have shown a higher prevalence rate of smoking among men than women in each region (Table 1). Male smoking prevalence varies substantially among regions, from less than 30% in AFR to 60% in WPR. Female smoking prevalence also varies substantially by region, from less than 10% in AFR, EMR, SEAR, and WPR to more than 20% in AMR and EUR. The gender differential, the ratio of male smoking prevalence to female smoking prevalence, is one way of measuring the difference in smoking rates between men and women. This differential is 11 in SEAR, and from 7 to 9 in EMR, WPR, and AFR. In EUR and AMR, the gender differential is less than 2, with smoking rates for males 60% to 80% higher than for females (Table 1).

Though fewer women than men are smokers, an increas-

ing number of young women are taking up cigarettes. Recent reports describe an alarming increase in smoking rates among women.<sup>4,5</sup> Further, data from different sources show the gap in smoking rates between men and women is narrowing.<sup>5</sup> This report uses data from the Global Youth Tobacco Survey (GYTS) surveillance system to describe gender differences in rates of tobacco use among young people within the six WHO regions. Each country participating in the GYTS used identical sampling procedures and methodology, a core questionnaire, and consistent data processing procedures to ensure a high degree of accuracy and comparability for cross-country analyses.

### METHODOLOGY

Data for this paper came from the GYTS surveillance system supported by WHO and the Centers for Disease Control and Prevention (CDC).<sup>3</sup> The GYTS, an international surveillance system, enhances the capacity of countries to monitor tobacco use among youth and to guide the development, implementation, and evaluation of tobacco prevention and control programs. The GYTS has been administered at 121 sites in 76 countries and the Gaza Strip/West Bank, with national-level data collected in 52 countries, and state, province/region, or city data collected in 24 countries. It has been administered in 25 sites in AFR, 42 sites in AMR, 14 sites in EMR, 8 sites in EUR, 22 sites in SEAR, and 10 sites in WPR. Data for both boys and girls are available for all but one site (Saudi Arabia), which only included schools teaching boys.

The GYTS uses a two-stage cluster sample survey design that produces representative samples of students in grades associated with ages 13-15 years. The sampling frame included all schools containing any of the identified grades. At the first stage, the probability of schools being selected was proportional to the number of students that

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had enrolled in the specified grades. At the second sampling stage, classes within the selected schools were randomly selected. All students attending school the day the survey was administered in selected classes were eligible to participate.

A weighting factor was applied to each student record to adjust for non-responses and variation in the probability of selection at the school, class, and student levels. SUDAAN, a software package for statistical analysis of correlated data, was used to compute 95% confidence intervals.<sup>6</sup> Differences between prevalence estimates were considered statistically significant if the 95% confidence intervals did not overlap.

For the 121 sites included in this study, the school response rate ranged from 100% to 68.8% (median 100%); student response rate ranged from 99.7% to 56.9% (median 87.4%); and the overall response rate (school rate \* student rate) ranged from 97.1% to 55.2% (median 84.7%). The number of students who completed the GYTS at each site ranged from 129 in Montserrat to 16,416 in the United States. In total, more than 400,000 students in nearly 6,000 schools have completed the GYTS. Details of the GYTS methodology and response rates are included in previous publications.<sup>3,7</sup>

Prevalence rates assessed in this study were for current cigarette smoking, (defined as “the percentage of students who smoked cigarettes on one or more days during the past 30 days”) and current other tobacco use, (defined as “the percentage of students who had used any form of tobacco products other than cigarettes during the past 30 days”). The popularity of other tobacco products and the means of ingesting them vary substantially across regions and countries, from using smokeless or chewing tobacco in the United States, India, and throughout Latin and South America, to smoking tobacco in water pipes in the Middle East, to chewing betel nut with tobacco in the Western Pacific and Southeast Asia, to smoking bidis in India. Boy/girl ratios for cigarette smoking and other tobacco use were computed by dividing the rate among boys by the rate among girls (Table 2).

The findings in this report are subject to at least three limitations. First, because the sample of youth surveyed

was limited to those who attended school, they may not be representative of all 13-15-year-olds. However, in most countries, the majority of young people in this age group do attend regular, private, or technical schools.<sup>8</sup> Second, these data apply only to youth in school the day the survey was administered, and who actually participated in the survey. However, the median student response rate was 87.4%, and only 12 of the 121 sites had a school response rate less than 80%. Third, data are based on self-reports of students, who may tend to under- or over-report their use of tobacco. Although the extent of variance in reporting of tobacco use cannot be determined, responses to cigarette smoking and other tobacco use questions (as used in the GYTS) have been analyzed and shown to have good test-retest reliability.<sup>9</sup>

## RESULTS

The most unexpected finding from this study was the lack of gender difference in rates of cigarette smoking and other tobacco use at most sites. Of the 120 sites with data on cigarette smoking for both boys and girls, 61 showed no significant gender difference (Table 2). For other tobacco use, 82 of the 117 sites with data (70.1%) showed no significant gender difference. The lack of gender difference in cigarette smoking rates was found in some of the sites in five WHO regions: 14 of 25 sites in AFR, 30 of 42 sites in AMR, 4 of 8 sites in EUR, 7 of 22 sites in SEAR, and 5 of 10 sites in WPR. In addition, no significant gender difference existed in rates of other tobacco use at more than one-half the sites surveyed in AFR (20 of 25 sites), AMR (32 of 41 sites), EUR (4 of 8 sites), SEAR (18 of 21 sites), and WPR (6 of 9 sites). Only EMR had a majority of sites with boys significantly more likely than girls to smoke cigarettes (12 of 13 sites) and use other tobacco products (11 of 13 sites).

Girls were significantly more likely than boys to smoke cigarettes at three sites – Santiago, Chile; Maldonado, Uruguay; and Bulgaria. Girls were significantly more likely than boys to use other tobacco products at two sites – Costa Rica and the Northern Mariana Islands.

A second surprising finding in this study was the relatively high prevalence in the use of tobacco products other than cigarettes. For boys and girls, usage rates for other tobacco products was equal to or greater than those for cigarette smoking in the majority of sites in AFR, AMR, EMR, SEAR, and WPR. In EUR, cigarette smoking rates were significantly higher than rates of other tobacco use in all eight sites for boys and girls.

A region-by-region overview of survey results follows.

### Africa

At 12 of the 25 sites in AFR, no gender difference existed in either cigarette smoking or other tobacco use rates (Table 2). At two sites (Cross River State, Nigeria; and Seychelles) there was no gender difference in cigarette smoking rates, but boys were significantly more likely than girls to use other tobacco products. At eight sites, no gender difference existed in other tobacco use rates, but boys were significantly more likely than girls to smoke cigarettes. At three sites (Bamako, Mali; Senegal; and Swaziland) boys were significantly more likely than girls to smoke cigarettes

Table 1  
Estimated Smoking Prevalences  
for Males and Females 15 Years of Age and Older,  
by WHO Region<sup>2</sup>

WHO Region	Male	Female	Male / Female Ratio
Africa (AFR)	29.0	4.0	7.2:1
Americas (AMR)	35.0	22.0	1.6:1
Eastern Mediterranean (EMR)	35.0	4.0	8.8:1
Europe (EUR)	46.0	26.0	1.8:1
Southeast Asia (SEAR)	44.0	4.0	11.0:1
Western Pacific (WPR)	60.0	8.0	7.5:1

Table 2  
**Percentage of Students Aged 13-15 Who Used Tobacco –  
 Global Youth Tobacco Survey, 1999-2002**

Country	Percentage of Girls in Survey Population	Boys Currently Smoke Cigarettes*	Girls Currently Smoke Cigarettes*	Boys / Girls Ratio	Boys Currently Use Other Tobacco Products*	Girls Currently Use Other Tobacco Products*	Boys / Girls Ratio
<b>Overall / Median</b>	<b>50.3</b>	<b>15.0</b>	<b>6.6</b>	<b>1.9:1.0</b>	<b>10.9</b>	<b>7.4</b>	<b>1.5:1.0</b>
<b>Africa (AFR)</b>	<b>49.9</b>	<b>10.4</b>	<b>4.6</b>	<b>2.2:1.0</b>	<b>11.0</b>	<b>9.2</b>	<b>1.1:1.0</b>
Botswana, 2002	55.6	3.9 (±1.6)	2.1 (±1.3)	1.9:1.0	10.1 (±3.1)	9.2 (±2.4)	1.1:1.0
Burkina Faso							
- Ouagadougou, 2001	50.7	26.1 (±6.7)	11.6 (±3.3)	2.2:1.0	7.9 (±3.3)	6.3 (±2.5)	1.3:1.0
- Bobo Dioulasso, 2001	44.1	28.6 (±8.6)	9.6 (±5.3)	3.0:1.0	5.9 (±2.6)	5.5 (±2.7)	1.1:1.0
Ghana, 2000	44.9	5.1 (±2.4)	3.1 (±1.8)	1.6:1.0	13.6 (±4.0)	15.5 (±4.3)	0.9:1.0
Kenya, 2001	49.3	8.7 (±3.2)	4.7 (±2.9)	1.9:1.0	9.0 (±3.1)	8.9 (±2.8)	1.0:1.0
Lesotho, 2002	58.3	16.6 (±4.5)	4.8 (±1.7)	3.5:1.0	12.3 (±2.9)	14.8 (±2.3)	0.8:1.0
Malawi							
- Blantyre, 2001	51.3	4.2 (±4.8)	0.9 (±0.5)	4.7:1.0	14.4 (±4.4)	15.2 (±3.8)	0.9:1.0
- Lilongwe, 2001	49.9	9.5 (±3.1)	3.1 (±2.1)	3.1:1.0	12.8 (±3.4)	12.7 (±2.7)	1.0:1.0
Mali							
- Bamako, 2001	43.1	41.8 (±7.3)	4.6 (±2.2)	9.1:1.0	13.1 (±3.8)	4.8 (±2.5)	2.7:1.0
Mauritania, 2001	49.3	19.8 (±3.9)	8.8 (±2.4)	2.2:1.0	15.8 (±2.7)	13.4 (±3.1)	1.2:1.0
Mozambique							
- Maputo, 2002	53.9	5.0 (±2.5)	1.4 (±1.1)	3.6:1.0	5.4 (±1.7)	6.0 (±1.7)	0.9:1.0
- Gaza Inhambé, 2002	47.2	5.0 (±3.0)	3.2 (±2.3)	1.6:1.0	5.7 (±2.4)	7.8 (±2.0)	0.7:1.0
Niger, 2001	47.2	22.4 (±4.6)	6.1 (±3.9)	3.7:1.0	6.7 (±2.4)	7.5 (±3.4)	0.9:1.0
Nigeria							
- Cross River State, 2001	48.6	7.7 (±4.1)	3.3 (±1.7)	2.3:1.0	18.6 (±4.6)	9.4 (±3.3)	2.0:1.0
Senegal, 2002	42.3	20.2 (±4.0)	4.4 (±1.7)	4.6:1.0	7.3 (±2.1)	2.9 (±1.0)	2.5:1.0
South Africa, 2002	52.9	21.0 (±4.6)	10.6 (±2.5)	2.0:1.0	14.8 (±2.4)	11.9 (±1.9)	1.2:1.0
Seychelles, 2002	50.5	29.9 (±6.9)	23.9 (±5.5)	1.3:1.0	13.0 (±3.8)	5.5 (±2.3)	2.4:1.0
Swaziland, 2001	51.8	10.4 (±2.4)	3.4 (±1.0)	3.1:1.0	8.9 (±2.2)	5.2 (±0.2)	1.7:1.0
Togo, 2002	34.3	14.9 (±4.0)	4.0 (±1.7)	3.7:1.0	9.5 (±2.5)	7.1 (±2.1)	1.3:1.0
Uganda							
- Arua, 2002	32.4	18.8 (±6.9)	15.0 (±6.2)	1.3:1.0	23.8 (±7.3)	20.0 (±6.5)	1.2:1.0
- Kampala, 2002	51.7	3.7 (±2.7)	2.6 (±1.7)	1.4:1.0	9.7 (±1.2)	9.8 (±3.1)	1.0:1.0
- Mpigi, 2002	56.1	9.2 (±3.9)	3.5 (±1.7)	2.6:1.0	10.9 (±3.4)	9.3 (±1.8)	1.2:1.0
Zimbabwe							
- Harare, 1999	52.4	11.6 (±3.0)	9.9 (±5.0)	1.2:1.0	11.0 (±4.1)	8.4 (±4.4)	1.3:1.0
- Manicaland, 1999	51.3	10.3 (±3.9)	8.7 (±4.2)	1.2:1.0	11.6 (±5.7)	13.9 (±4.4)	0.8:1.0
Zambia, 2002	42.7	10.2 (±2.5)	8.4 (±3.7)	1.2:1.0	17.0 (±3.4)	17.4 (±4.0)	1.0:1.0
<b>The Americas (AMR)</b>	<b>51.5</b>	<b>16.6</b>	<b>12.2</b>	<b>1.2:1.0</b>	<b>10.2</b>	<b>6.4</b>	<b>1.4:1.0</b>
Antigua and Barbuda, 2000	55.2	5.2 (±2.2)	4.2 (±1.8)	1.2:1.0	10.8 (±3.1)	8.4 (±2.9)	1.3:1.0
Argentina							
- Buenos Aires, 2000	49.8	21.9 (±3.8)	28.1 (±3.6)	0.8:1.0	8.8 (±1.7)	5.2 (±1.6)	1.7:1.0
Bahamas, 2000	53.6	8.6 (±3.0)	5.3 (±2.0)	1.6:1.0	14.7 (±4.3)	9.3 (±2.1)	1.6:1.0
Barbados, 2002	51.0	7.6 (±2.2)	6.4 (±2.3)	1.2:1.0	11.9 (±3.9)	8.7 (±1.9)	1.4:1.0

\* Smoked cigarettes or used other tobacco products on  $\geq 1$  of the 30 days preceding the survey.  
 NA - Not available, question was not asked.

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Table 2  
Percentage of Students Aged 13-15 Who Used Tobacco –  
Global Youth Tobacco Survey, 1999-2002

Country	Percentage of Girls in Survey Population	Boys Currently Smoke Cigarettes*	Girls Currently Smoke Cigarettes*	Boys / Girls Ratio	Boys Currently Use Other Tobacco Products*	Girls Currently Use Other Tobacco Products*	Boys / Girls Ratio
<b>The Americas (AMR)</b>	<b>51.5</b>	<b>16.6</b>	<b>12.2</b>	<b>1.2:1.0</b>	<b>10.2</b>	<b>6.4</b>	<b>1.4:1.0</b>
<i>(continued)</i>							
Bolivia							
- Cochabamba, 2000	51.3	26.0 (±3.6)	16.1 (±2.9)	1.6:1.0	10.2 (±2.2)	7.9 (±1.7)	1.3:1.0
- La Paz, 2000	50.0	26.4 (±2.7)	20.4 (±3.8)	1.3:1.0	11.7 (±2.4)	8.1 (±1.6)	1.4:1.0
- Santa Cruz, 2000	51.2	27.2 (±3.0)	18.8 (±3.3)	1.4:1.0	10.5 (±2.0)	7.0 (±1.3)	1.5:1.0
Colombia							
- Bogota, 2001	49.4	31.0 (±3.5)	33.4 (±3.8)	0.9:1.0	5.9 (±1.4)	4.3 (±1.6)	1.4:1.0
Chile							
- Coquimbo, 2000	49.8	35.6 (±8.8)	42.8 (±6.6)	0.8:1.0	7.8 (±1.5)	4.8 (±1.4)	1.6:1.0
- Santiago, 2000	50.6	31.3 (±5.0)	44.4 (±2.9)	0.7:1.0	6.9 (±1.6)	5.4 (±1.6)	1.3:1.0
- Valparaiso - Viña del Mar, 2000	49.2	29.9 (±5.9)	41.7 (±7.7)	0.7:1.0	5.8 (±3.6)	4.6 (±1.8)	1.3:1.0
Costa Rica, 1999	51.9	18.2 (±2.8)	17.3 (±2.3)	1.1:1.0	5.0 (±1.1)	7.7 (±1.1)	0.6:1.0
Cuba							
- Havana, 2001	47.0	15.8 (±4.1)	13.7 (±4.0)	1.2:1.0	4.4 (±1.4)	7.9 (±2.1)	0.6:1.0
Dominica, 2000	51.5	13.4 (±4.0)	9.6 (±2.9)	1.4:1.0	15.0 (±4.4)	6.4 (±1.9)	2.3:1.0
Ecuador							
- Guayaquil, 2001	52.9	9.1 (±4.4)	9.0 (±2.7)	1.0:1.0	9.1 (±2.7)	7.4 (±2.0)	1.2:1.0
- Quito, 2001	46.1	27.2 (±4.0)	12.6 (±3.8)	2.2:1.0	12.1 (±3.1)	7.1 (±1.4)	1.7:1.0
- Zamora, 2001	52.1	27.4 (±5.0)	22.0 (±5.7)	1.2:1.0	18.9 (±4.7)	16.5 (±3.6)	1.1:1.0
Grenada, 2000	53.4	9.9 (±3.5)	6.5 (±2.0)	1.5:1.0	10.3 (±2.5)	7.2 (±1.7)	1.4:1.0
Guyana, 2000	59.8	11.3 (±4.0)	6.4 (±3.8)	1.8:1.0	13.0 (±5.7)	5.2 (±2.1)	2.5:1.0
Haiti							
- Port-au-Prince, 2001	55.5	10.2 (±3.8)	14.0 (±5.2)	0.7:1.0	6.3 (±3.4)	13.3 (±7.4)	0.5:1.0
Jamaica, 2001	51.2	20.3 (±5.7)	11.8 (±2.3)	1.7:1.0	10.5 (±3.8)	5.4 (±1.5)	1.9:1.0
Mexico							
- Monterrey, 2000	51.4	23.4 (±4.4)	14.8 (±2.9)	1.6:1.0	11.3 (±2.2)	3.7 (±1.4)	3.1:1.0
Montserrat, 2000	50.3	3.5 (±5.9)	6.3 (±11.9)	0.6:1.0	10.2 (±7.7)	7.7 (±4.0)	1.3:1.0
Panama, 2002	50.4	14.7 (±4.6)	11.1 (±3.7)	1.3:1.0	11.0 (±3.0)	7.8 (±2.0)	1.4:1.0
Peru							
- Huancayo, 2000	51.7	20.3 (±5.0)	10.6 (±4.6)	1.9:1.0	10.9 (±3.1)	4.3 (±1.8)	2.5:1.0
- Ica, 2002	53.0	11.4 (±2.4)	16.9 (±4.4)	0.7:1.0	3.8 (±1.6)	4.8 (±1.9)	0.8:1.0
- Lima, 2000	53.0	20.2 (±4.5)	17.4 (±4.3)	1.2:1.0	7.7 (±2.9)	5.1 (±2.0)	1.5:1.0
- Tarapoto, 2000	47.6	18.6 (±4.3)	9.8 (±3.8)	1.9:1.0	6.0 (±2.8)	5.0 (±2.5)	1.2:1.0
- Trujillo, 2000	51.8	22.3 (±6.1)	9.6 (±5.5)	2.3:1.0	5.3 (±2.5)	5.2 (±2.7)	1.0:1.0
St. Kitts & Nevis, 2002	56.6	7.0 (±3.3)	1.9 (±1.4)	3.7:1.0	14.6 (±4.6)	12.1 (±2.7)	1.2:1.0
St. Lucia, 2001	58.9	11.5 (±3.3)	7.9 (±2.8)	1.5:1.0	9.0 (±3.1)	5.2 (±2.2)	1.7:1.0
St. Vincent & The Grenadines, 2001	52.5	17.2 (±3.9)	10.7 (±3.0)	1.6:1.0	NA	NA	NA
Suriname, 2000	54.8	14.7 (±6.1)	7.1 (±3.0)	2.1:1.0	7.3 (±2.5)	4.4 (±1.9)	1.7:1.0
Trinidad & Tobago, 2000	50.3	16.0 (±2.9)	7.6 (±1.6)	2.1:1.0	5.7 (±1.7)	3.9 (±0.9)	1.5:1.0
United States, 2000	49.7	17.7 (±1.6)	17.8 (±1.8)	1.0:1.0	19.9 (±2.0)	9.1 (±1.1)	2.2:1.0

\* Smoked cigarettes or used other tobacco products on  $\geq 1$  of the 30 days preceding the survey.

NA - Not available, question was not asked.

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Table 2  
Percentage of Students Aged 13-15 Who Used Tobacco –  
Global Youth Tobacco Survey, 1999-2002

Country	Percentage of Girls in Survey Population	Boys Currently Smoke Cigarettes*	Girls Currently Smoke Cigarettes*	Boys / Girls Ratio	Boys Currently Use Other Tobacco Products*	Girls Currently Use Other Tobacco Products*	Boys / Girls Ratio
<b>The Americas (AMR)</b> <i>(continued)</i>	<b>51.5</b>	<b>16.6</b>	<b>12.2</b>	<b>1.2:1.0</b>	<b>10.2</b>	<b>6.4</b>	<b>1.4:1.0</b>
Uruguay							
- Colonia, 2001	53.3	12.8 (±5.4)	18.4 (±8.9)	0.7:1.0	7.2 (±4.3)	5.6 (±3.2)	1.3:1.0
- Maldonado, 2001	51.5	14.0 (±3.8)	26.0 (±4.9)	0.5:1.0	11.0 (±4.0)	6.0 (±2.7)	1.8:1.0
- Montevideo, 2001	51.1	22.2 (±4.7)	29.6 (±5.2)	0.8:1.0	12.7 (±4.0)	7.3 (±2.2)	1.7:1.0
- Rivera, 2001	52.9	18.3 (±5.4)	22.5 (±4.7)	0.8:1.0	8.5 (±4.3)	5.8 (±2.1)	1.5:1.0
Venezuela, 1999	55.3	6.0 (±2.0)	8.4 (±2.0)	0.7:1.0	10.5 (±2.4)	6.8 (±1.4)	1.5:1.0
Virgin Islands, 2001 (American)	48.2	3.6 (±1.8)	3.3 (±1.6)	1.1:1.0	8.6 (±2.5)	4.9 (±1.8)	1.8:1.0
Virgin Islands, 2001 (British)	59.2	4.1 (±3.3)	2.8 (±2.4)	1.5:1.0	8.3 (±4.9)	8.4 (±3.5)	1.0:1.0
<b>Eastern Mediterranean (EMR)</b>	<b>50.8</b>	<b>22.8</b>	<b>5.3</b>	<b>4.3:1.0</b>	<b>13.7</b>	<b>7.1</b>	<b>1.9:1.0</b>
Bahrain, 2001	51.0	17.5 (±3.0)	3.9 (±2.0)	4.5:1.0	19.9 (±3.7)	10.5 (±2.8)	1.9:1.0
Egypt, 2001	47.3	3.9 (±1.3)	4.0 (±2.5)	1.0:1.0	18.3 (±4.4)	12.0 (±3.9)	1.5:1.0
Gaza Strip / West Bank							
- Gaza Strip, 2001	48.3	15.1 (±5.6)	3.4 (±1.4)	4.4:1.0	12.4 (±4.2)	3.6 (±1.7)	3.4:1.0
- North West Bank, 2001	52.6	25.2 (±5.7)	4.1 (±1.4)	6.1:1.0	17.8 (±2.8)	9.2 (±2.5)	1.9:1.0
- Middle West Bank, 2001	50.6	25.5 (±7.7)	5.5 (±3.0)	4.6:1.0	27.2 (±4.5)	11.1 (±2.8)	2.5:1.0
- South West Bank, 2001	52.8	23.6 (±3.3)	5.1 (±1.4)	4.6:1.0	28.8 (±5.5)	10.3 (±1.9)	2.8:1.0
Jordan, 1999	49.9	22.0 (±4.0)	9.9 (±2.3)	2.2:1.0	14.5 (±3.3)	7.1 (±1.5)	2.0:1.0
Kuwait, 2001	52.4	14.8 (±2.0)	4.9 (±1.1)	3.0:1.0	19.1 (±2.1)	12.9 (±1.7)	1.5:1.0
Lebanon, 2001	56.1	10.4 (±3.1)	5.3 (±1.6)	2.0:1.0	45.0 (±4.9)	33.9 (±3.6)	1.3:1.0
Morocco, 2001	43.2	3.9 (±1.1)	1.0 (±0.8)	3.9:1.0	10.4 (±1.4)	7.6 (±1.8)	1.4:1.0
Saudi Arabia							
- Riyadh, 2001	0.0	4.7 (±1.2)	NA	NA	10.3 (±1.8)	NA	NA
Sudan, 2001	50.8	10.8 (±5.3)	1.9 (±1.1)	5.7:1.0	17.2 (±3.4)	10.4 (±2.6)	1.7:1.0
Tunisia, 2001	50.2	19.0 (±3.3)	3.6 (±1.1)	5.3:1.0	11.3 (±2.2)	3.1 (±0.8)	3.6:1.0
United Arab Emirates, 2001	51.3	11.7 (±3.2)	2.2 (±0.9)	5.3:1.0	19.0 (±3.0)	10.2 (±2.3)	1.9:1.0
<b>Europe (EUR)</b>	<b>49.9</b>	<b>33.9</b>	<b>29.0</b>	<b>1.2:1.0</b>	<b>10.4</b>	<b>5.3</b>	<b>2.0:1.0</b>
Bulgaria, 2002	50.1	26.0 (±4.4)	39.4 (±5.1)	0.7:1.0	5.3 (±1.9)	3.3 (±1.4)	1.6:1.0
Czech Republic, 2002	49.7	34.0 (±4.2)	35.1 (±4.2)	1.0:1.0	11.6 (±2.2)	5.3 (±1.5)	2.2:1.0
Latvia, 2002	49.0	33.8 (±3.1)	27.8 (±4.3)	1.2:1.0	13.7 (±2.9)	7.0 (±1.7)	2.0:1.0
Lithuania, 2001	49.5	37.6 (±5.1)	29.6 (±5.2)	1.3:1.0	9.3 (±2.3)	4.9 (±2.3)	1.9:1.0
Poland							
- Urban, 1999	54.5	26.3 (±4.9)	23.3 (±4.6)	1.1:1.0	15.4 (±4.8)	8.0 (±2.5)	1.9:1.0
- Rural, 1999	53.0	20.2 (±4.0)	10.4 (±3.0)	1.9:1.0	7.1 (±2.1)	3.8 (±1.5)	1.9:1.0

\* Smoked cigarettes or used other tobacco products on  $\geq 1$  of the 30 days preceding the survey.  
NA - Not available, question was not asked.

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Table 2  
Percentage of Students Aged 13-15 Who Used Tobacco –  
Global Youth Tobacco Survey, 1999-2002

Country	Percentage of Girls in Survey Population	Boys Currently Smoke Cigarettes*	Girls Currently Smoke Cigarettes*	Boys / Girls Ratio	Boys Currently Use Other Tobacco Products*	Girls Currently Use Other Tobacco Products*	Boys / Girls Ratio
<b>Europe (EUR)</b>	<b>49.9</b>	<b>33.9</b>	<b>29.0</b>	<b>1.2:1.0</b>	<b>10.4</b>	<b>5.3</b>	<b>2.0:1.0</b>
<i>(continued)</i>							
Russian Federation							
- Moscow, 1999	50.9	38.5 (±3.5)	28.4 (±3.4)	1.4:1.0	15.4 (±2.3)	6.0 (±1.0)	2.6:1.0
Ukraine							
- Kiev, 1999	46.8	37.8 (±4.4)	29.5 (±3.6)	1.3:1.0	8.1 (±1.6)	5.3 (±1.5)	1.5:1.0
<b>Southeast Asia (SEAR)</b>	<b>44.9</b>	<b>13.5</b>	<b>3.2</b>	<b>4.2:1.0</b>	<b>10.8</b>	<b>8.4</b>	<b>1.3:1.0</b>
<i>(SEAR)</i>							
India							
- Assam, 2001	45.0	14.7 (±5.2)	4.4 (±3.3)	3.3:1.0	31.7 (±6.1)	20.8 (±5.5)	1.5:1.0
- Andhra Pradesh, 2001	41.8	2.8 (±1.3)	1.2 (±1.7)	2.3:1.0	7.2 (±2.1)	4.5 (±2.1)	1.6:1.0
- Arunachal Pradesh, 2001	42.2	21.6 (±4.1)	2.8 (±2.1)	7.7:1.0	34.0 (±9.5)	41.6 (±8.1)	0.8:1.0
- Bihar, 2000	24.0	16.7 (±3.4)	4.8 (±4.4)	3.5:1.0	46.8 (±6.5)	46.8 (±12.8)	1.0:1.0
- Delhi, 2002	46.7	0.5 (±0.5)	0.5 (±0.8)	1.0:1.0	4.0 (±1.6)	2.3 (±1.9)	1.7:1.0
- Goa, 2000	44.5	0.5 (±0.5)	0.5 (±0.5)	1.0:1.0	3.2 (±1.5)	2.7 (±1.5)	1.2:1.0
- Maharashtra, 2000	40.8	2.6 (±1.6)	1.9 (±1.5)	1.4:1.0	9.4 (±3.1)	5.2 (±2.8)	1.8:1.0
- Manipur, 2001	46.8	24.7 (±5.6)	5.5 (±2.9)	4.5:1.0	52.0 (±10.4)	42.4 (±13.7)	1.2:1.0
- Meghalay, 2001	47.2	15.8 (±7.0)	5.8 (±1.9)	2.7:1.0	40.2 (±7.3)	26.9 (±7.2)	1.5:1.0
- Mizoram, 2001	49.7	32.2 (±4.7)	13.4 (±4.0)	2.4:1.0	28.7 (±4.1)	36.2 (±5.7)	0.8:1.0
- Nagaland, 2001	47.9	24.8 (±6.7)	12.5 (±3.6)	2.0:1.0	46.4 (±9.5)	44.5 (±6.5)	1.0:1.0
- Orissa, 2002	41.8	2.8 (±1.0)	0.6 (±0.4)	4.7:1.0	14.3 (±3.4)	9.9 (±3.4)	1.4:1.0
- Sikkim, 2001	44.9	24.2 (±6.4)	10.6 (±4.7)	2.3:1.0	45.6 (±7.3)	28.7 (±4.5)	1.6:1.0
- Tamil Nadu, 2000	48.4	1.1 (±0.5)	0.5 (±0.4)	2.2:1.0	4.6 (±1.2)	3.4 (±1.4)	1.4:1.0
- Tripura, 2001	45.2	13.5 (±7.8)	6.6 (±4.3)	2.0:1.0	37.9 (±9.9)	30.9 (±10.9)	1.2:1.0
- Uttaranchal, 2002	35.2	3.4 (±1.9)	0.4 (±0.5)	6.0:1.0	20.1 (±10.3)	13.0 (±7.2)	1.5:1.0
- Uttar Pradesh, 2002	26.7	8.4 (±7.7)	6.5 (±7.2)	1.3:1.0	15.1 (±2.9)	9.8 (±3.6)	1.5:1.0
- West Bengal, 2000	24.6	4.2 (±1.2)	0.7 (±0.9)	6.0:1.0	9.7 (±1.9)	5.9 (±2.8)	1.6:1.0
Indonesia							
- Jakarta, 2000	50.2	38.9 (±6.7)	4.7 (±1.9)	8.3:1.0	4.0 (±1.3)	0.9 (±0.7)	4.4:1.0
Myanmar, 2001	52.6	19.0 (±3.7)	3.2 (±1.1)	5.9:1.0	NA	NA	NA
Nepal, 2001	42.1	4.0 (±1.9)	0.6 (±0.7)	6.7:1.0	7.8 (±2.8)	3.9 (±3.4)	2.0:1.0
Sri Lanka, 1999	49.3	6.2 (±2.3)	1.6 (±0.9)	3.9:1.0	9.2 (±2.1)	5.0 (±1.2)	1.8:1.0
<b>Western Pacific (WPR)</b>	<b>50.0</b>	<b>11.0</b>	<b>6.4</b>	<b>1.7:1.0</b>	<b>10.5</b>	<b>6.2</b>	<b>1.7:1.0</b>
China							
- Chongqing, 1999	53.2	11.4 (±3.5)	1.9 (±0.7)	6.0:1.0	10.8 (±1.5)	8.6 (±2.3)	1.3:1.0
- Guangdong, 1999	48.0	6.7 (±1.9)	2.2 (±0.9)	3.0:1.0	8.0 (±1.2)	5.4 (±1.4)	1.5:1.0
- Shandong, 1999	48.8	4.6 (±1.8)	0.2 (±0.3)	23.0:1.0	7.6 (±1.9)	6.2 (±1.9)	1.2:1.0
- Tianjin, 1999	52.8	10.7 (±3.7)	1.5 (±0.8)	7.1:1.0	5.5 (±1.6)	4.4 (±1.3)	1.2:1.0
- Macao (China), 2001	46.5	8.1 (±4.1)	5.6 (±3.1)	1.4:1.0	2.0 (±1.3)	0.4 (±0.5)	5.0:1.0
Fiji, 1999	51.0	13.7 (±4.6)	7.1 (±3.4)	1.9:1.0	10.5 (±3.0)	5.4 (±2.0)	1.9:1.0

\* Smoked cigarettes or used other tobacco products on  $\geq 1$  of the 30 days preceding the survey.

NA - Not available, question was not asked.

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and to use other tobacco products.

### Americas

At 24 of the 42 sites in AMR, no gender difference existed in either cigarette smoking or other tobacco use rates (Table 2). At four sites (Buenos Aires, Argentina; Coquimbo, Chile; Dominica; and the United States) no gender difference existed in cigarette smoking rates, but boys were significantly more likely than girls to use other tobacco products. In Costa Rica there was no gender difference in cigarette smoking rates, but girls were significantly more likely than boys to use other tobacco products. In St. Vincent & the Grenadines, no gender difference existed in cigarette smoking rates, and the question on other tobacco use was not asked. At six sites (Cochabamba, Bolivia; Jamaica; Tarapoto and Trujillo, Peru; St. Kitts & Nevis; and Trinidad & Tobago), no gender difference existed in other tobacco use rates but boys were significantly more likely than girls to smoke cigarettes. In Santiago, Chile, and Maldonado, Uruguay, no gender difference existed in other tobacco use rates but girls were significantly more likely than boys to smoke cigarettes. At four sites (Santa Cruz, Bolivia; Quito, Ecuador; Monterrey, Mexico; and Huancayo, Peru), boys were significantly more likely than girls to smoke cigarettes and to use other tobacco products.

### Eastern Mediterranean

At 11 of the 13 sites in EMR, boys were significantly more likely than girls to smoke cigarettes and use other tobacco products (Table 2). In Egypt, no gender difference existed in cigarette smoking or other tobacco use rates, and in Morocco no gender difference existed in other tobacco use rates, but boys were significantly more likely than girls to smoke cigarettes.

### Europe

At one of the eight sites in EUR (Lithuania), no gender

difference existed in cigarette smoking or other tobacco use rates (Table 2). At three sites (Czech Republic; Latvia; and urban Poland), no gender difference existed in cigarette smoking rates, but boys were significantly more likely than girls to use other tobacco products. In rural Poland and Kiev, Ukraine, no gender difference emerged in rates of other tobacco use, but boys were significantly more likely than girls to smoke cigarettes. In Bulgaria, no gender difference existed in rates of other tobacco use, but girls were significantly more likely than boys to smoke cigarettes. In Moscow, Russian Federation, boys were significantly more likely than girls to smoke cigarettes and to use other tobacco products.

### Southeast Asia

At 7 of the 22 sites in SEAR, no gender difference existed in cigarette smoking or other tobacco use rates (Table 2). At 10 other sites in India and in Nepal, no gender difference was noted in rates of other tobacco use, but boys were significantly more likely than girls to smoke cigarettes. At three sites (Sikkim, India; Jakarta, Indonesia; and Sri Lanka), boys were significantly more likely than girls to smoke cigarettes and to use other tobacco products. In Myanmar, boys were significantly more likely than girls to smoke cigarettes, and the question on other tobacco use was not asked.

### Western Pacific

At 2 of the 10 sites in WPR (Macao [China] and Palau), no significant gender difference existed in cigarette smoking or other tobacco use rates (Table 2). In Fiji and the Northern Mariana Islands no significant gender difference existed in cigarette smoking rates but boys were significantly more likely than girls to use other tobacco products. In Singapore, no significant gender difference was noted in cigarette smoking rates, and the question on other tobacco use was not asked. At all four sites in China, no significant

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Table 2  
Percentage of Students Aged 13-15 Who Used Tobacco –  
Global Youth Tobacco Survey, 1999-2002

Country	Percentage of Girls in Survey Population	Boys Currently Smoke Cigarettes*	Girls Currently Smoke Cigarettes*	Boys / Girls Ratio	Boys Currently Use Other Tobacco Products*	Girls Currently Use Other Tobacco Products*	Boys / Girls Ratio
<b>Western Pacific (WPR)</b> <i>(continued)</i>	<b>50.0</b>	<b>11.0</b>	<b>6.4</b>	<b>1.7:1.0</b>	<b>10.5</b>	<b>6.2</b>	<b>1.7:1.0</b>
Northern Mariana Islands, 2000	49.4	40.7 (±6.9)	37.5 (±5.1)	1.1:1.0	44.1 (±5.5)	62.2 (±5.9)	0.7:1.0
Palau, 2000	49.6	20.0 (±4.4)	23.3 (±5.4)	0.9:1.0	57.5 (±5.1)	49.5 (±5.0)	1.2:1.0
Philippines, 2000	56.9	26.2 (±3.8)	12.4 (±2.3)	2.1:1.0	14.5 (±1.8)	8.4 (±1.4)	1.7:1.0
Singapore, 2000	50.3	10.5 (±1.8)	7.5 (±1.4)	1.4:1.0	NA	NA	NA

\* Smoked cigarettes or used other tobacco products on  $\geq 1$  of the 30 days preceding the survey.  
NA - Not available, question was not asked.

gender difference existed in other tobacco use rates, but boys were significantly more likely than girls to smoke cigarettes. In the Philippines, boys were significantly more likely than girls to smoke cigarettes and to use other tobacco products.

## DISCUSSION

Findings from this study have important implications for tobacco control program efforts being developed by countries.

First, the high level of tobacco use among girls suggests the need for programs that target girls specifically. Although recent data show a substantial decline in smoking prevalence among young women in some developed countries such as the United States and Scandinavian countries, transnational tobacco companies continue to identify women and girls in developing countries and particularly in Asia as a vast untapped market.<sup>5</sup> A recent WHO report based on tobacco industry documents reveals that the strategy of the tobacco industry is to target marketing efforts to the "top 50 cigarette markets," with China, India, and Indonesia at the top of the list.<sup>5</sup> Studies have shown that a person's risk for using tobacco products is closely associated with that person's exposure to tobacco marketing.<sup>5</sup> Selling tobacco products to women and girls currently represents the single largest product marketing opportunity in the world.<sup>5</sup> Tobacco companies have successfully marketed to women by producing products specifically for women, by advertising directly to the female population through fashion magazines, and by sponsoring fashion and sports events for women.<sup>4</sup> Advertising and marketing themes associating tobacco use with independence, body image, glamour, and romance are targeted to girls as well as women. Previously reported data from the GYTS show that 78.3% of students have seen ads for cigarettes on billboards.<sup>3</sup> Findings from the WHO report and the GYTS, suggest that comprehensive tobacco control programs need to counter current tobacco advertising and marketing practices aimed at young women with alternative images related to independence and overall self-image as well as educate girls about the effect of tobacco use on reproductive health outcomes. If counter-marketing and anti-tobacco messages are not specifically directed toward young women, the targeted marketing campaigns of tobacco companies will continue unchecked.

Second, tobacco control programs must be comprehensive and target all tobacco use rather than just cigarette smoking. Results from the GYTS confirm that use of tobacco products other than cigarettes is rising among youth. At the Third International Conference on Smokeless Tobacco, experts concluded that smokeless tobacco use continues to contribute to the high rates of oral cancer.<sup>10</sup> Experts at that conference also reported that smokeless tobacco is being marketed as a method for smoking cessation or reduction and even as a safe alternative to cigarette

smoking. GYTS data showing high prevalence in the use of tobacco products other than cigarettes reinforces the importance of tobacco control programs targeting all forms of tobacco. Although broadening the tobacco control focus from cigarettes to all forms of tobacco may stretch limited resources, results from the GYTS show that in most regions and many countries, the usage rate for other tobacco products is equal to or greater than that for cigarettes. Effective educational strategies are needed to expand the focus of tobacco control programs to all types of tobacco use.

In conclusion, Peto and Lopez<sup>1</sup> estimate 1 billion smokers in the world today, and by 2030 another billion young adults will have started to smoke. They concluded that if current smoking patterns persist, the annual number of tobacco-related deaths worldwide is likely to rise from 4.9 million in 2000 to more than 10 million by 2030, with 70% of these deaths occurring in developing countries. Data from the Global Youth Tobacco Survey reflect the increased use of tobacco in forms other than cigarettes and by doing so indicate that the epidemic of tobacco-related health problems may be graver than previously predicted. Furthermore, as described in this report, the rapid rise in tobacco use among female adolescents also suggests a greater rise in adult tobacco use and tobacco-related deaths. These findings suggest that countries face greater challenges in designing, developing, and implementing tobacco control programs. ■

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